

03500.015727.



SEE,

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

TAKEO TSUKAMOTO

Application No.: 09/941,780

Filed: August 30, 2001

For: ELECTRON-EMITTING DEVICE,
ELECTRON-EMITTING
APPARATUS, IMAGE DISPLAY
APPARATUS, AND LIGHT-
EMITTING APPARATUS

) Examiner: D. H. Vu

) Group Art Unit: 2821

) January 13, 2003

Commissioner for Patents
Washington, D.C. 20231

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SECOND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56 and in accordance with the practice under 37 C.F.R. §§ 1.97 and 1.98, the Examiner's attention is directed to the documents listed on the enclosed Form PTO-1449. Copies of the listed documents are also enclosed.

For a concise explanation of relevance for various non-English documents, the Examiner is directed to the corresponding English-language abstracts, English translations, and/or English-language counterparts listed in association with the corresponding non-English documents in the attached Form PTO-1449.

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09-02

For the concise statement of relevance of non-English document 2000-277003, the Examiner is respectfully referred to English-language counterpart document US 2002/136896.

For the concise statement of relevance of non-English documents 04-212236 and 03-295131, the Examiner is respectfully referred to English-language counterpart documents 5,192,240, 5,214,346, and A1 443 865.

For the concise statement of relevance of non-English documents 05-159696 and 05-198253, the Examiner is respectfully referred to English-language counterpart documents 5,382,867 and A1 535 953.

For the concise statement of relevance of non-English document 05-274997, the Examiner is respectfully referred to English-language counterpart document 5,612,587.

For the concise statement of relevance of non-English document 11-232997, the Examiner is respectfully referred to English-language counterpart documents 6,313,572 and A1 936 650.

For the concise statement of relevance of non-English document 10-289650, the Examiner is respectfully referred to English-language counterpart documents 6,135,839 and A1 871 195.

The Examiner's attention is also directed to the following U.S. Applications:

<u>APPLICATION NO.</u>	<u>FILING DATE</u>	<u>GROUP ART UNIT</u>
09/178,680	10/26/98	2879
09/865,698	5/29/01	2821
09/941,595	8/30/01	2879
09/941,642	8/29/01	2879
09/640,643	8/29/01	2852

A copy of each cited application is enclosed.

It is respectfully requested that the above information be considered by the Examiner and that a copy of the enclosed Form PTO-1449 be returned indicating that such information has been considered.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



Attorney for Applicant
Registration No. 42,476

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U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

ATTY DOCKET NO.

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LIST OF REFERENCES CITED BY APPLICANT(S)
(Use several sheets if necessary)

APPLICANT

Takao Tsukamoto

FILING DATE

August 30, 2001

GROUP

2821

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,773,921	06/30/98	Keesman et al.	313	309	
	5,973,444	10/26/99	Xu et al.	313	309	
	5,935,639	8/10/99	Sullivan et al.	427	78	
	4,956,578	9/11/90	Shimizu et al.	315	3	
	5,185,554	2/9/93	Nomura et al.	313	495	
	6,448,709	9/02	Chuang et al.	313	497	
	6,204,597	03/01	Xie et al.	313	310	

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES/NO/ OR ABSTRACT
	WO 89/07163	08/10/89	Japan			English
	WO 90/07023	06/28/90	PCT			English
	JP 08-115652	05/07/96	Japan			Abst.& Transl.

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	R.T.K. Baker et al., "Formation of Carbonaceous Deposits from the Platinum-Iron Catalyzed Decomposition of Acetylene," 37 J. Catal. 101-105 (1975).
	R.T.K. Baker, "Catalytic Growth of Carbon Filaments," 27 (3) Carbon 315-323 (1989).
	S. Iijima, "Helical Microtubules of Graphitic Carbon," Nature, Vol. 345, 56-58 (1991).
	T. W. Ebbesen et al., "Large-Scale Synthesis of Carbon Nanotubes," Nature, Vol. 358, 220-222 (1992).
	W. A. DeHeer et al., "Aligned Carbon Nanotube Films: Production and Optical and Electronic Properties," Science Vol. 268, 845-847 (1995).

EXAMINER

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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Sheet 1 of 5

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PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)
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	5,577,943	11/96	Vickers et al.	445	24	
	2002/136896	09/26/00	Takikawa et al.	428	408	
	5,192,240	03/09/93	Komatsu	445	24	
	5,214,346	05/25/93	Komatsu	313	309	
	5,382,867	01/17/95	Maruo et al.	313	309	
	5,612,587	03/18/97	Itoh et al.	313	309	
	6,313,572	11/06/01	Yamada	313	310	

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	0 758 028 A2	02/12/97	EPO	D01F	9/127	English
	WO 98/05920	02/12/98	PCT	G01B	7/34	English
	0 394 698 A2	10/31/90	EPO	H01J	1/30	English
	2000/277003	06/10/00	Japan	H01J	9/02	No

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	T. Guo et al., "Catalytic Growth of Single- Walled Nanotubes by Laser Vaporization," Ch m Phys. Lett., Vol. 243, 49-54 (1995).
	A. G. Rinzler et al., "Unraveling Nanotubes: Field Emission from an Atomic Wire," Science, Vol. 269, 1550-1553 (1995).
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	T. Kyotani et al., "Preparation of Ultrafine Carbon Tubes in Nanochannels of an Anodic Aluminum Oxide Film," Chem. Mater., Vol. 8, 2109-2113 (1996).
	A. Thess et al., "Crystallin Ropes of Metallic Carbon Nanotubes," Science, Vol. 273 483-487 (1996).

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		6,135,839	10/24/00	Iwase et al.	445	24	

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		0 797 233 A2	09/24/97	EPO	H01J	1/30	English
		0 980 089 A1	02/16/00	EPO	H01J	1/30	English
		0 986 084 A2	03/15/00	EPO	H01J	1/30	English
		1 117 118 A1	07/08/01	EPO	H01J	1/312	English
		0 716 439	06/12/96	EPO	H01J	3/02	English
		2-112125	04/24/90	JAPAN	H01J	1/30	Abst. & corresponding U.S. Patent 4,956,578

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	H. Dai et al., "Single-Wall Nanotubes Produced by Metal-Catalyzed Disproportionation of Carbon Monoxide," Chem. Phys. Lett., Vol. 260, 471-475 (1996).
	H. Dai et al., "Nanotubes as Nanoprobes in Scanning Probe Microscopy," Nature, Vol. 384, 147-150 (1996).
	A. C. Dillon et al., "Storage of Hydrogen in Single-Walled Carbon Nanotubes," Nature, Vol. 386, 377-379 (1997).
	W.P. Dyke et al., "Field Emission", Advances in Electronics and Electron Physics, Vol. 8, (1956) pp. 89-185
	C.A. Spindt et al., "Physical Properties of Thin-Film Field Emission Cathodes with Molybdenum Cones", Journal of Applied Physics, Vol. 47, No. 12 (1976), pp. 5248-5263

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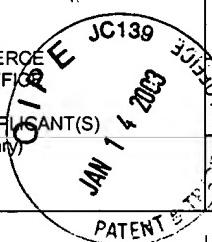
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	3-20941	01/29/91	JAPAN	H01J	31/12	Abst. & corresponding U.S. Patent 5,185,554
	5-211029	08/20/93	JAPAN	H01J	1/30	No
	8-264109	10/11/96	JAPAN	H01J	1/30	Abst.
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	1 113 478 A1	7/02	EPO			
	1 122 344 A3	8/01	EPO			
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	C.A. Mead, "Operation of Tunnel-Emission Devices", <i>Journal of Applied Physics</i> , Vol. 32, No. 4, (1961), pp. 646-652
	Toshiaki Kusunoki et al., "Fluctuation-Free Electron Emission from Non-Formed Metal-Insulator-Metal (MIM) Cathodes Fabricated by Low Current Anodic Oxidation", <i>Japanese Journal of Applied Physics</i> , Vol. 32 No. 11B, (1993), p. L1695-1697
	M.I. Elinson et al., "The Emission of Hot Electrons and the Field Emission of Electrons from Tin Oxide", <i>Radio Engineering and Electronic Physics</i> , (1965) pp. 1290-1296
	G. Dittmer, "Electrical Conduction and Electron Emission of Discontinuous Thin Films", <i>Thin Solid Films</i> , Vol. 9, (1972) pp. 317-329

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		04-212236	03/08/92	Japan	H01J	1/30	No
		03-295131	12/26/91	Japan	H01J	1/30	No
		A2 535 953	04/07/93	EPO	H01J	1/30	English
		05-159696	06/25/93	Japan	H01J	1/30	No
		05-198253	08/06/93	Japan	H01J	1/30	No
		05-274997	10/22/93	Japan	H01J	1/30	Abst.
		11-232997	08/27/99	Japan	H01J	1/30	No
		A1 936 650	08/18/99	EPO	H01J	3/02	English
		10-289650	10/27/98	Japan	H01J	1/30	No
		A1 871 195	10/14/98	EPO	H01J	1/30	English

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	M. Hartwell et al., "Strong Electron Emission from Patterned Tin-Indium Oxide Thin Films", IEEE Trans. Ed. Conf., (1983) pp.519-521
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	U.S. PATENT APPLICATION PUBLICATION NO. US 2002/0009637A1, 1/24/02 (Murakami et al.)
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